INITIAL COMMENTS FOR SENATE F.A.D.T. LEGISLATION REFERENCES COMMITTEE INQUIRY ON NUCLEAR POWERED SUBMARINE SAFETY LEGISLATION

from

Royal Institution of Naval Architects

Background:

The Royal Institution of Naval Architects (RINA) is the global governing body for Naval Architecture and Maritime Engineering.

This submission is made following a request for comments by Senate Foreign Affairs, Defence and Trade Legislation Committee on the 23rd November 2023.

This document is submitted by Sarah Watts, Chair RINA Safety Committee, on behalf of the President of RINA, Prof. Catriona Savage.

Introduction:

This submission has been prepared by a small team of suitably expert people in nuclear Submarine legislation and implementation and local Australian maritime legislation and implementation experts. Suitably anonymised CVs are available on request.

The submission is in two parts.

The first part is a set of strategic observations – a non-exhaustive list of guiding principles which we believe the legislation should seek to meet, and be judged against. These have been written by members with direct, up to date and extensive involvement in nuclear powered Submarine legislation and its implementation. The second part are some direct observations on the proposed texts of the legislation. These have been mainly submitted by Australian experts.

We do not require our submission to be confidential. Please attribute it to myself as above.

We are only commenting on the main bill, not the transitional provisions bill.

Part 1.

The following are a list of high-level observations about effective nuclear legislation.

- It is recommended that the Australian Government take note of, and follow, the Implementation of nuclear regulation compliance statements in accordance with IAEA General Safety Requirements Part 2 (GSR- Part 2), UK Office of Nuclear Regulation

(ONR) Licence Conditions[1] 1-36 as appropriate (LCs), Safety Assessment Principles[2] (SAPs) and Technical / Nuclear Security Assessment Guides[3] (TAGs), as recommended in Item 2.1 of the ARPANSA Nuclear Safety Committee meeting of 9th February 2023[4], and in line with ARPANSA/ASA and COMCare requirements.

- It is recommended that the Australian Government produce legislation that will create an effective framework to conduct supply chain assessments and gap analysis on existing and potential new suppliers, all site licence civil works, submarine design, manufacture, and operational control, in accordance with ONR LCs, ARPANSA/ASA and ISO 19443[5] – to include UK design authorities and manufacturers.
- It is recommended that the proposed legislation should provide structured supply chain training requirements against nuclear regulatory codes and standards, in order to increase the organisational capability of the Australian suppliers. It is noted that there is potential to introduce a training academy and supply chain growth programme with a suitable university(s).
- The legislation should seek to support the management system on the production and roll out of procedures, process maps, guidance documents, et al., to comply with the legal, statutory, regulatory and safety requirements.
- The legislation should support the introduction of a SQEP[6] and Competency Framework across all disciplines in accordance with LCs 10 – Training, and 12 – Duly Authorised and other SQEP.
- The legislation should require the training to all personnel on LC's as applicable by discipline/function.
- The legislation should Introduce and implement a Nuclear Baseline in accordance with the UK Safety Directors Forum Good Practice Guide – Nuclear Baseline and the Management of Organisational Change[7], in compliance with LC 36 – Organisational Capability.
- The legislation should recognise the effectiveness and applicability of standards such as ISO 19443:2018, and create proportional requirements for the implementation of such requirements and training in them.
- The legislation should require that strategies are in place for the implementation of LC's in a Control Point and Hold Point Logic structure.
- The legislation should require independent assurance and surveillance across all project activities.

Part 2

Comments on the Main Bill Regarding the Minister's Key Points

a) ***The intention of the Bills being to ensure meeting all Australia's nonproliferation obligations and commitments under international law and that Australia is a responsible nuclear steward and maintains the highest level of nuclear safety in respect of nuclear-powered submarines;***

[1] https://www.onr.org.uk/documents/licence-condition-handbook.pdf
[2] https://www.onr.org.uk/saps/saps2014.pdf
[3] https://www.onr.org.uk/operational/tech_asst_guides/index.htm
[4] https://www.arpansa.gov.au/about-us/advisory-council-and-committees/nuclear-safety-committee/minutes#minutes
[5] ISO 19443:2018 – Quality Management Systems – Specific requirements for the application of ISO 9001:2015 by organisations in the supply chain of the nuclear energy sector supplying products and services important to nuclear safety (ITNS)
[6] Suitably Qualified and Experienced Person
[7] https://www.nuclearinst.com/write/MediaUploads/SDF%20documents/OCWG/Nuclear_Baseline_and_Management_of_Organisational_Change_GPG.pdf

1. Exclusion of nuclear-armed submarines from the definition of "AUKUS submarine" and consequently from regulated activity would appear to satisfy the non-proliferation aspect of this point, since no provision is made for Australian nuclear-armed submarines and any legislation covering nuclear-armed UK and US submarines is unchanged.

2. However it is a concern to RINA that the Bill relates specifically to "nuclear safety", particularly in s.6 and s.99, and not to safety in general including nuclear safety, since the operational safety of any submarine is dependent on the satisfactory operation of the ship and all of its systems rather than only its means of generating propulsion energy.

3. Establishment of responsible nuclear stewardship will be subject to a number of comments under the remaining points.

b) ***Establishment of a new regulatory framework, including an independent regulator, to ensure nuclear safety within Australia's nuclear-powered submarine enterprise and capability lifecycle;***

1. Obviously, to secure the public confidence and trust referred to in s.6(a), the nuclear safety regulator oversighting the design, construction and sustainment of Australia's nuclear-powered submarines needs to be competent in the subject matter with which it deals and have the necessary independence to ensure appropriate safety standards are built into and maintained in those submarines. However, the Minister's speech indicates that the powers of the regulator do not extend beyond "regulated activities" and "designated zones", the latter being only within Australia according to the provisions of s.10(2).

2. The provisions of the Bill give rise to the question of when the powers of the regulator start in relation to a nuclear reactor, or submarine section containing such a reactor, that might be built outside Australia for shipping to Osborne for fitting into an Australian submarine. The reactor would appear to be within the definition of "NNP equipment or plant" and possession of it would thus fall within the defined "material activity" if it were not for the words in s.14(1)(a) "in a designated zone or an Australian submarine", since part of a submarine under construction cannot reasonably be construed as a submarine (undefined term). So a reactor that is built outside of a designated zone, such as in another country, would not appear to come under the jurisdiction of the Regulator until it arrives at a designated zone such as Osborne Naval Shipyard.

3. Notwithstanding the preceding paragraph, the definition of "NNP facility" at s.12(c) would appear to include:
    i. a storage facility (wherever located) for a reactor or submarine section containing a reactor intended for an Australian submarine; or
    ii. a ship carrying a reactor or submarine section intended for an Australian submarine.

   To give the Regulator appropriate access and control to a foreign facility referred to in the preceding paragraph 2, perhaps this definition should be expanded to

include a manufacturing facility for a reactor or submarine section containing a reactor intended for an Australian submarine.

4. Given the situations outlined in the previous two paragraphs, essential submarine components such as propulsion turbines, pumps and valves integral to the NNP system would, provided they are subject to this legislation at all given the Bill's reference to "nuclear safety", similarly only come within the jurisdiction of the Regulator when they reach a designated zone. They would not be "NNP equipment or plant" as they do not of themselves produce ionising or non-ionising radiation. So the question raised above in (a).2 applies; is the design and construction of non-nuclear aspects of the submarine, but crucial to its operational safety, under the jurisdiction of the Regulator?

5. It is clear that if non-nuclear safety issues were to be made the responsibility of an agency other than the Regulator, the crucial potential impact of non-nuclear safety matters means that they should **not** be given to the ADF since they have the potential to undermine the independence of the Regulator. Perhaps the Australian Submarine Agency might be the appropriate body to handle these non-nuclear safety matters.

c) ***Harmonisation with other schemes, including those relating to work health and safety, nuclear nonproliferation and civilian nuclear safety;***

1. If the role of the Regulator is restricted to "nuclear safety" then the work health and safety matters under the purview of the Regulator would be restricted to nuclear safety. It is logical that measures implemented in this area should be harmonised with those in place in relation to civilian nuclear safety. This gives rise to the questions of whether an authority other than the Regulator would be given charge of workplace health and safety and whether that other authority should be the same as handles non-nuclear safety matters.

2. RINA holds the view that the standards applied to the design and construction of Australia's nuclear propelled submarines should indeed be harmonised with those for civilian nuclear safety and that this harmonisation should be managed by appropriate interchange or secondment of personnel between the Regulator and ANSTO as its civilian counterpart.

d) "regulated activities" include activities relevant to Australian, UK and US conventionally armed nuclear-powered submarines and, given Australia's stance on nuclear armament, do not include activities on nuclear-armed UK and UK submarines;

1. Agreed.

e) Regulated activities can only occur within 'designated zones' in Australia or in relation to Australia's conventionally armed, nuclear-powered submarines (wherever they are located);

1. Agreed, subject to appropriate amendments in response to the concerns expressed above in relation to the present Bill's lack of coverage of possible construction outside Australia of reactor(s) and/or section(s) of submarine(s) containing reactor(s). These amendments need not necessarily involve any change to the definitions of "designated zones" or "regulated activities".

f) The main bill establishes licensing arrangements, nuclear safety duties and responsibilities that apply to people when they undertake a regulated activity;

1. No objection to these proposals.

g) The main bill establishes a new independent regulator, the Australian Naval Nuclear Power Safety Regulator, to work with existing regulators to promote the safety of our submariners, Australian and international communities and the environment;

1. Agreed in-principle, although the terms of reference of the Regulator and its interface with other agencies or existing regulators that may become involved in setting and enforcing standards for non-nuclear safety and workplace health and safety need to be outlined in more detail.

h) The Regulator will be responsible for licensing, monitoring and, where necessary, enforcing compliance with nuclear safety duties. This includes the nuclear-powered submarines themselves and also the facilities where they are built, operated from and maintained;

1. Agreed. This appears to go in a direction requested in our earlier comments; safety critical functions of the Submarine must be seen as safety critical systems of the nuclear propulsion system since failure of Submarine critical functions such as watertight integrity, navigation, propulsion etc are likely to directly threaten the reactor. The nuclear component supply chain must include Submarine safety critical functions and these should be agreed at the earliest stage.

i) The Regulator will be led by a Director-General and a Deputy Director-General, both of whom will only be appointed where the Minister is satisfied they have the competence, independence, technical expertise and relevant experience to properly discharge their important functions. To ensure the independence of the regulator from the Australian Defence Force chain of command, neither the of these persons will be members of the Australian Defence Force;

1. It appears normal within the Defence portfolio for positions such as Director-General and Deputy Director-General to be filled by retired senior officers of the ADF who may still be members of the Defence Reserve. The personal contacts built up over the service careers of such persons would potentially prejudice the independence of the Regulator so the appointments to these positions need to strike a balance between independence from the ADF and awareness of its culture. Accordingly it is suggested that no more than one of these two positions

should be filled by a retired ADF (or foreign equivalent) senior officer who should not be a member of the Defence Reserve, with the other position being held by an appropriately qualified person from the civil nuclear industry or academia. Ss.109(3) of the Bill would appear to be in line with this approach although its wording could be strengthened either by amendment or elaboration in regulation.

2. Further to the preceding paragraph, s.101 of the Bill provides for *members of the Regulator* to be its Director-General, Deputy Director-General, staff, inspectors and "persons whose services are made available under section 119". S.119 provides for persons in this last category to come from the ADF, the AFP, other Commonwealth agencies or companies, government bodies/authorities of States/Territories, government bodies/authorities of foreign countries or international organisations (not a defined term but presumed to refer to agencies of the United Nations). Whilst substantial numbers of s.119 secondments will no doubt be needed particularly in the initial stages, it is important that the Regulator concentrates on building core competencies within its staff and thus avoids on-going reliance on such secondments and potential regulatory capture by the ADF or other seconding bodies.

3. RINA notes that s.118(1) provides "The staff of the Regulator must be persons engaged under the *Public Service Act 1999*".

j) ***The main bill provides the Minister for Defence with a power to give the regulator a direction about the performance of its functions and the exercise of its relevant powers.***

1. The Bill appears to incorporate appropriate safeguards in relation to such directions, so RINA has no comment.

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Contact details

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